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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,961	02/25/2004	Hiroki Fujii	2004-0302A	8467

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EXAMINER

RIDDLE, KYLE M

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 02/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/784,961	Applicant(s) FUJII ET AL.	
	Examiner Kyle M. Riddle	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>09222004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Amendment

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art on pages 1 and 2, paragraphs 2-4, of the instant application, in view of Abu et al. (Japanese Patent 58-178812).

Applicant's admitted prior art discloses a conventional hydraulic lash adjuster comprising:

- a bottomed cylinder fixed to a cylinder head and a plunger accommodated in the cylinder so as to be vertically moved;
- the plunger having an upper end protruding from the cylinder;
- a rocker arm supported on the upper end of the plunger;
- the interior of the plunger serving as a low-pressure chamber;
- a lower interior of the cylinder divided by a bottom wall of the plunger, thereby serving as a high-pressure chamber;
- the bottom wall of the plunger formed with a valve port of a check valve;

- the low-pressure chamber filled with a hydraulic fluid supplied from a fluid supply passage via communication holes formed in the circumferential walls of the respective cylinder and plunger;

- the high-pressure chamber filled with the hydraulic fluid supplied via the valve port of the check valve;

- a spherical valve element accommodated in the high-pressure chamber and biased in such a direction that it closes the valve port;

- the valve element and valve port constituting a check valve;

- the side of the rocker arm applying a downward pressing force to the plunger closing the valve port by the valve element such that the high-pressure chamber is tightly closed, whereupon the hydraulic fluid filling the high-pressure chamber prevents the plunger from moving downward;

- the plunger moving upward such that the volume of the high-pressure chamber is increased and the pressure reduced, the valve element moving downward relative to the plunger, thereby opening the valve port;

- the hydraulic fluid flowing from the low-pressure chamber into the high-pressure chamber, so that the interior of the high-pressure chamber remains filled with the hydraulic fluid;

- the valve element colliding against a valve seat face of the valve port every time the valve element opens or closes the valve port;

- the valve element is made of a steel having a large specific gravity, for example, SUJZ.

(Page 1 and 2, paragraphs 2-4, specification disclosing prior art conventional lash adjuster).

Applicant's admitted prior art fails to disclose the valve element made of material with a specific gravity less than steel but greater than the surrounding fluid.

Abu et al. teaches a hydraulic adjuster with a check ball 7 made of ceramic (see enclosed English translation abstract) and an arcuate valve seat face (see Figures). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Abu et al. in the prior art lash adjuster disclosed by the applicant, since the use thereof would help prevent the valve seat face from wearing and possibly prevent free movement of the valve element by providing a ceramic valve element with a specific gravity between that of steel and the surrounding fluid.

3. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art on pages 1 and 2, paragraphs 2-4, of the instant application, in view of Abu et al., and further in view of Taniguchi et al. (U.S. Patent 5,185,923).

Applicant's admitted prior art, as modified by Abu et al., discloses the hydraulic lash adjuster with a ceramic valve element having a specific gravity less than steel but greater than the surrounding fluid, however, fails to disclose the valve element made of a ceramic containing silicon nitride.

Taniguchi et al. teaches a tappet 400 containing a semi-spherical ceramic portion made of silicon nitride (column 4, lines 15-33). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Taniguchi et al. in the prior art lash adjuster disclosed by the applicant, as modified by Abu et al., since the use thereof would have provided a specific, lighter-than-steel material to help prevent the valve seat face from wearing and possibly prevent free movement of the valve element. Moreover, there is

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nothing in the record which establishes that the application of such a material in the valve element represents a novel or unexpected result (See *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975)).

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being obvious over applicant's admitted prior art on pages 1 and 2, paragraphs 2-4, of the instant application, in view of Abu et al.

Applicant's admitted prior art, as modified by Abu et al., discloses the hydraulic lash adjuster cited above, however, fails to disclose the dual spring elements biasing the valve element.

Applicant's admitted prior art teaches biasing the valve element in such a direction that it closes the valve port (page 1, paragraph 3, lines 1-3 of the paragraph). Single and multiple spring use for biasing ball elements are well known in the art and particularly in tappets and hydraulic lash adjusters, and the inclusion of such would have been a matter of obvious choice.

Response to Arguments

5. Applicant's arguments filed 23 November 2004 have been fully considered but they are not persuasive.

6. Applicant amended independent claim 1 to exclude the specific gravity of the valve elements disclosed by prior cited Barnes, however, disclosed an information disclosure statement that included the Japanese Patent for Abu et al., cited above, with a spherical ball made of ceramic. Ceramic is known to have a specific gravity less than steel but greater than hydraulic fluid. The arguments regarding claim 1 are therefore moot in view of the new rejection cited above. Applicant argues on page 8, first two paragraphs, that the material of Taniguchi et al. was chosen for different properties than that of the present application requiring sealing of the ball on

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the valve seat. Examiner disagrees. The sealing properties of the ceramic ball of Abu et al. are inherent to the operation of the disclosed device. Taniguchi et al. merely teaches the addition of silicon nitride contained within ceramic for use in similar mechanical devices. With regard to the applicant's argument on the bottom of page 8 concerning claim 3 and referring to the valve seat having an arcuate face, the figures in the Japanese Patent of Abu et al. clearly show a ball sealing itself against an arcuate face which is well known for these types of devices. Applicant argues claims 4-7 are patentable due to their dependence on claim 3, but examiner disagrees for the reasons cited above.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Conclusion

8. The IDS (PTO-1449) filed on 22 September 2004 has been considered. An initialized copy is attached hereto.

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Communication

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyle M. Riddle whose telephone number is (571) 272-4864. The examiner can normally be reached on M-F (07:30-5:00) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kyle M. Riddle
Examiner
Art Unit 3748

kmr



THOMAS DENION
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